

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1.-27. Cancelled

28. (Currently Amended) An image acquisition unit with a heating device for monitoring an exterior of a vehicle, comprising:

a casing comprising a protected interior, said casing defining a window closed by a transparent element and supporting means defined by part of said casing for supporting an optical system inside said casing and facing said window;

image detection means located in said casing, facing said optical system and associated with connection means with the exterior, for supplying electrical signals and for bidirectional signal interchange; and

heating means for providing thermal energy to said transparent element, or to an adjacent zone thereto, said heating means comprising a heating element disposed along at least a portion of a periphery of said transparent element.

29. (Previously Presented) The image acquisition unit according to claim 28, wherein said heating means comprises at least one electrical heater supplied with direct current from said connection means.

30. (Previously Presented) The image acquisition unit according to claim 29, further comprising control means for controlling the operation of said electrical heater.

31. (Previously Presented) The image acquisition unit according to claim 30, wherein said control means comprises an on/off switch to control an activation time of said supply current of the electrical heater.

32. (Previously Presented) The image acquisition unit according to claim 31, wherein said on/off switch is associated with a thermostat.

33. (Previously Presented) The image acquisition unit according to claim 31, wherein said on/off switch is at a vehicle user's disposal.

34. (Previously Presented) The image acquisition unit according to claim 32, wherein said on/off switch is common for at least another heating device of the vehicle, selected from a group consisting of: a heating system for a rear window, and a heating system for an external rear view mirror.

35. (Previously Presented) The image acquisition unit according to claim 30, wherein said control means comprises a man-machine interface to provide different parameters coming from one or more detectors associated with the image acquisition unit and/or with other parts of the vehicle, and/or from an input device at a vehicle's user disposal, to a central processor of the vehicle, which supports a program adapted to control said supply current of the electrical heater through time as a function of the result of an analysis and a processing of said parameters.

36. (Previously Presented) The image acquisition unit according to claim 35, wherein said parameters are selected from a group consisting of an interior temperature of the image acquisition unit casing (1), and the exterior environment temperature.

37. (Previously Presented) The image acquisition unit according to claim 29, wherein said electrical heater comprises at least one electrical resistance directly applied on said transparent element.

38. (Previously Presented) The image acquisition unit according to claim 37, wherein said electrical resistance has the form of an open ring of resistive ink or paste applied on the internal face of said transparent element (3).

39. (Previously Presented) The image acquisition unit according to claim 38, wherein connection lines are connected to end portions of said open ring of resistive ink or paste.

40. (Previously Presented) The image acquisition unit according to claim 38, wherein said resistive ink or paste is not weldable and comprises a layer of conductive ink or paste weldable to at least the end portions of said open ring of resistive ink or paste.

41. (Previously Presented) The image acquisition unit according to claim 40, wherein connection lines are connected to said layer of weldable conductive ink or paste applied on the end portions of said open ring of resistive ink or paste.
42. (Previously Presented) The image acquisition unit according to claim 40, wherein said layer of weldable conductive ink or paste is, furthermore, extended along one or more sections of the open ring of resistive ink or paste, in order to reduce its resistance and, therefore, adjust the heating power to a requested value.
43. (Previously Presented) The image acquisition unit according to claim 38, further comprising a layer of a protective mask material over said resistive ink or paste and/or conductive ink or paste, in order to protect the electrical resistance.
44. (Previously Presented) The image acquisition unit according to claim 39, further comprises a layer of a protective mask material over said resistive ink or paste and/or conductive ink or paste, in order to protect the electrical resistance.
45. (Previously Presented) The image acquisition unit according to claim 40, further comprises a layer of a protective mask material over said resistive ink or paste and/or conductive ink or paste, in order to protect the electrical resistance.
46. (Previously Presented) The image acquisition unit according to claim 41, further comprises a layer of a protective mask material over said resistive ink or paste and/or conductive ink or paste, in order to protect the electrical resistance.
47. (Previously Presented) The image acquisition unit according to claim 42, further comprises a layer of a protective mask material over said resistive ink or paste and/or conductive ink or paste, in order to protect the electrical resistance.
48. (Previously Presented) The image acquisition unit according to claim 37, wherein said electrical resistance has the form of a laminar layer of a resistive transparent material applied on the internal face of said transparent element.
49. (Previously Presented) The image acquisition unit according to claim 48, wherein a pair of electrodes of conductive ink or paste are applied on opposite zones of the resistive material laminar layer, in connection to itself, and connection lines are connected to said electrodes.

50. (Previously Presented) The image acquisition unit according to claim 29, wherein said electrical heater comprises at least one electrical resistance applied in an enclosing way on a zone of the casing adjacent to the transparent element.

51. (Previously Presented) The image acquisition unit according to claim 50, wherein said electrical resistance is applied on an external surface of said zone of the casing adjacent to the transparent element.

52. (Previously Presented) The image acquisition unit according to claim 50, wherein said electrical resistance is applied on an internal surface of said zone of the casing adjacent to the transparent element.

53. (Previously Presented) The image acquisition unit according to claim 37, wherein said electrical resistance comprises of a material, the resistance of which increases with the increase of its temperature.

54. (Previously Presented) The image acquisition unit according to claim 48, wherein said electrical resistance comprises of a material, the resistance of which increases with the increase of its temperature.

55. (Previously Presented) The image acquisition unit according to claim 50, wherein said electrical resistance comprises of a material, the resistance of which increases with the increase of its temperature.

56. (Previously Presented) The image acquisition unit according to claim 37 wherein said electrical resistance comprises a material, the resistance of which remains substantially constant with the temperature variations of itself.

57. (Previously Presented) The image acquisition unit according to claim 48 wherein said electrical resistance comprises a material, the resistance of which remains substantially constant with the temperature variations of itself.

58. (Previously Presented) The image acquisition unit according to claim 50 wherein said electrical resistance comprises a material, the resistance of which remains substantially constant with the temperature variations of itself.

59. (Previously Presented) The image acquisition unit according to claim 28, wherein said heating means comprises at least one element of a heat conductive material to transfer heat from a zone of the casing, where electronic components of said image detection means are located, to an adjacent zone to the transparent element, or close to it.

60. (Previously Presented) The image acquisition unit according to claim 59, wherein said heat conductive material is the material the casing is made of.

61. (Previously Presented) The image acquisition unit according to claim 28, wherein said heating means comprises a Peltier cell to transfer heat from a zone of the casing, where electronic components of said image detection devices are located, to an adjacent zone to the transparent element, or close to it.

62. (Currently Amended) ~~The~~ An image acquisition unit according to claim 28, with a heating device for monitoring an exterior of a vehicle, comprising:

a casing adapted for mounting on an exterior of said vehicle comprising a protected interior, said casing defining a window closed by a transparent element and supporting means defined by part of said casing for supporting an optical system inside said casing and facing said window;

image detection means located in said casing, facing said optical system and associated with connection means with the exterior, for supplying electrical signals and for bidirectional signal interchange; and

heating means for providing thermal energy to said transparent element, or to an adjacent zone thereto.

wherein said heating means comprises an air expulsion nozzle located on the exterior of said vehicle near the transparent element, and connected to a heating or air conditioning system of a vehicle's compartment, in order to create a warm air barrier in front of the external face of the transparent element.

63. (New) The image acquisition unit according to claim 28, wherein said transparent element further comprises a hydrophilic, water repellant and antireflective coating.

64. (New) The image acquisition unit according to claim 28, wherein said casing further comprising a cap coupled to a main body of the casing, said cap supporting said transparent element and said heating means, with said heating means disposed between said transparent element and said image detecting means, said cap including a passage extending along at least a portion of said cap for passage of at least one electrical connection from said connection means to said heating means.

65. (New) The image acquisition unit according to claim 64, wherein said heating means is disposed on an exterior surface of said cap and at least partially surrounds said optical system.

66. (New) The image acquisition unit according to claim 64, wherein said heating means is disposed on an interior surface of said cap and at least partially surrounds an area adjacent said optical system.